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Overweight women who join weight reducing clubs and the internal-external personality trait

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OVERWEIGHT WOMEN WHO JOIN WEIGHT REDUCING CLUBS
AND THE INTERNAL-EXTERNAL PERSONALITY CONSTRUCT

by

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ABSTRACT

The purpose of the present study was to investigate the relationship between attempts made by overweight women to lose weight and the internal-external (I-E) personality dimension. It was hypothesized that:

1) Overweight women who joined a weight reducing club would tend to be more internal than a control group of overweight women who had not joined a weight reducing club; 2) overweight women who were relatively internal would lose more weight than those who were relatively external; 3) decreases in individual I-E scores over a 4-6 week period would correlate with the degree of personal success at losing weight.

The experimenter recorded the initial weights and I-E scores of 40 overweight women upon entry into a weight reducing club. The women were then asked to take the I-E scale home to have a female friend fill it out. From four to six weeks after a subject had joined, her weight and I-E score were again measured and recorded.

The results demonstrated that: 1) The overweight women who joined a weight reducing club were significantly more internal than the overweight 'friends' who had not joined a weight reducing club; 2) there was no significant difference in weight loss between the internal joiners and the external joiners; 3) while there was no overall significant correlation between changes in

I-E scores and percentage of body weight loss, there was a significant negative correlation between changes in I-E scores and percentage of body weight loss for the joiners who were initially classified as internal persons.

The finding that the overweight women who were initially relatively internal did not lose more weight than those who were initially relatively external was discussed with respect to a contention which has been made by Lefcourt (1967, 1969, 1971). Lefcourt has argued that external persons are possibly just as motivated to achieve goals as internal persons but are less perceptually alert to reinforcement opportunities.

WITH LOVE TO CAROL

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INTRODUCTION

Most of the research that has been done on obesity has either attempted to identify its causes or attempted to find successful treatments to remedy the problem. Stuart (1967) has put forth the most simple account of obesity in noting that overweight persons have only two common characteristics, over eating and under exercising. Obviously, however, Stuart's simple explanation of how people get fat does not answer the question of why people eat too much or exercise too little. In addition, there are those authors who argue that there are factors aside from eating and exercising which contribute to the development of obesity.

Several researchers have suggested that particular people are more prone to become obese due to genetic factors. In an early study Davenport (1923) reported that in a sample of 51 children who all had slender parents, none of the children were above average weight and were frequently slim themselves. On the other hand, in a sample of 37 children who all had very obese parents, 33 percent were very obese and all the rest were at least of average weight. According to Dorfman and Johnson (1948) the majority of overweight children have at least one parent who is overweight with a percentage perhaps as high as 90 percent. Carrera (1967) reported figures which range between 69 percent and 80 percent of obese

children that have one or both parents obese. Also, Mayer (1968) has shown that less than 10 percent of the children with parents of normal weight are obese as opposed to 40 percent if both parents are obese.

Evidence suggests that whether or not an individual becomes obese is dependent somewhat on his inherited body type. Seltzer and Mayer (1964) studied the somatotypes and anthropomorphic measurements of obese and nonobese adolescent girls and demonstrated that obesity occurred more often in some physical types than in others. Mayer (1966) concluded that an individual is likely to become obese if his physique is characterized by at least a certain degree of endomorphy, unless the person resorts to exercise and/or dieting. Apparently, the obese are not only fatter than the nonobese but also tend to be larger in their bone and muscle components, (Seltzer and Mayer, 1964; 1969).

In a somewhat related area of genetic development, Carrera (1967) reported studies which demonstrated that children tend to become obese if they experienced accelerated maturation during early childhood.

Recently, Nisbett (1972) has also supported the argument that some individuals are "biologically programmed to be fat" (p. 433). He has cited evidence from Hirsch and Han (1969), Hirsch and Knittle (1970), Knittle and Hirsch (1968), and Bjorntorp (1972) which

has shown that the accumulation of fat in obese humans is determined primarily by the number rather than size of fat cells (adipocytes). Knittle and Hirsch (1968) presented findings from one sample of individuals which demonstrated that the obese subjects had three times as many fat cells as the normal weight group. Moreover, the number of fat cells in the body is evidently invariable (Hirsch and Knittle, 1970; Goss, 1966; Hirsch and Han, 1969; Sims, Kelleher, Horton, Gluck, Goldman, and Rowe, 1968), and according to animal research, is influenced mainly by heredity (Schemmel, Mickelsen, and Gill, 1970; Schemmel, Mickelsen, and Tolgay, 1969; Marshall, Smith, Munson, and Lehman, 1969) and early nutritional experience (Kennedy, 1957; Widdowson and McCance, 1960; and Knittle and Hirsch, 1968). Nisbett (1972) has also suggested that certain centers in the hypothalamus regulate food intake for the purpose of maintaining the 'established' obesity level. To support his position Nisbett cited a study by Hoebel and Teitelbaum (1966) which demonstrated that animals suffering from damage to the ventromedial nucleus of the hypothalamus will regulate their weight at a higher level in response to an elevated 'set point' for adipose tissue. Also, Powley and Keesey (1970) demonstrated that animals with lateral hypothalamic lesions will regulate their weight at a lower level. Accordingly, Nisbett proposed that hypothalamic centers "defend different baselines in

different individuals, maintaining whatever set point has been established by heredity and by nutritional conditions during the malleable period of childhood" (p. 435). Additional support for Nisbett's position has been presented by Cabanac, Duclaux, and Spector (1971).

Other researchers have also studied the role of the hypothalamus in the eating behaviour of humans. For example, Stunkard (1958) indicated that over eating in humans seemed to be caused by faulty satiety mechanisms. Monello, Seltzer, and Mayer (1965) also reported satiety abnormalities in obese adolescents.

In addition to the genetic and physiological positions on obesity are of course the environmental or developmental standpoints. Referring to the tendency of obesity to run in families, Carrera (1967) put the issue in perspective when he stated that "it would be important to inquire not only into the incidence of obesity in the family but also to obtain a detailed history of family life in order to better evaluate the relative weight of genetic factors versus other factors such as family eating patterns and family attitudes toward food which are operating, interacting and possibly modifying the genetic components" (p. 344). One possibility concerning the high incidence of obese children with obese parents is that inactive overweight parents might encourage sedentary activities for their children. Inactivity

does seem to be generally characteristic of overweight persons when compared to normal weight persons. Chirico and Stunkard (1960) measured the walking distance of a sample of obese and nonobese persons who were matched for occupational roles and found that the nonobese subjects outwalked the obese subjects in almost all cases. Bullen, Reed, and Mayer (1964) conducted a study on girls participating in sports and found that obese girls spent relatively little time engaged in actual strenuous activity. Subsequently, Dwyer, Feldman, and Mayer (1970) have argued that obesity is more often a result of inactivity than over eating. Carrera (1967) reported a study that was conducted by the Department of Agriculture which showed that a mere four percent of the obese teenagers ate excessively. On the other hand, however, a number of studies have demonstrated that obese children are frequently inactive children, including an early study conducted by Bruch and Touraine (1940). Bruch (1957) reported findings which demonstrated that of a sample of 140 obese children, 72 percent were physically inactive. Also, Carrera (1967) reported a study of inactivity which showed that a sample of obese high school girls actually ate less than a matched group of nonobese girls but spent two-thirds less time in physical activity. More recent research (Stimbert and Coffey, 1972) has also indicated that lack of exercise is probably a contributing factor in children

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and adolescents. Of course, the question as to whether or not inactivity precedes obesity or if early obesity inhibits physical activity is still unanswered.

The role of family attitudes in establishing poor eating habits has also been mentioned in the literature as a probable determinant of obesity. Mayer (1968) has argued that children are reinforced for eating everything that is placed in front of them, a practice which gradually conditions the child to over eat, and similarly Cappon (1973) has discussed how parents frequently use food as a negative or positive reinforcer.

Obesity has often been studied from a more psychosomatic standpoint, an approach which has produced many confusing and conflicting interpretations (Glucksman, and Hirsch, 1968). Perhaps one of the earliest interpretations was the orthodox psychoanalytic viewpoint which stated that obesity resulted from regression to the oral stage of development (Holland, Masling, and Copley, 1970). A number of researchers who have studied the personalities of obese people have noted the prevalence of emotional problems. In a study of 40 obese children and adolescents Tolstrup (1953) reported noticeable psychological disturbance in 81 percent. Moore, Stunkard, and Srole (1962) found that in a random sample of New York residents obese respondents scored the most poorly on virtually all tests of emotional adjustment. Subsequently, a common approach has attempted to link emotional tension,

depression, and general anxiety to eating behaviour and weight gain (Cauffman and Pauley, 1961). Burdon and Paul (1951) claimed that fear of social failure was one of the most common determinants of over eating by obese individuals. Kaplan and Kaplan (1957) also argued that obese individuals tend to over eat as a means of coping with anxiety. In a study conducted by Bullen, Monello, Cohen and Mayer (1963) obese adolescent girls frequently reported over eating when they felt bad, tense, nervous, depressed, bored and worried. However, research has demonstrated that fear inhibits gastric motility (Carlson, 1916) and results in the release of glucose into the blood (Cannon, 1915), which should have the effect of reducing physiological hunger. This knowledge has stimulated others to experimentally contest the proposal that anxiety leads to eating. Schacter, Goldman and Gordon (1968) failed to demonstrate differences between the eating behaviour of obese and nonobese individuals when subjected to a fearful situation. In addition, Janda and Rimm (1972) failed to find a relationship between weight loss and anxiety reduction. Abramson (1972) has concluded that although obese individuals do tend to be anxiety ridden, the anxiety itself does not lead to over eating.

An alternate idea was proposed by Bruch (1961) who noted that obese individuals were unable to recognize physiological symptoms of hunger. She argued that

the obese probably failed to learn the significance of internal stimuli as a result of being inappropriately fed as a child. Subsequent research has supported the hypothesis that obese persons do not know when they are physiologically hungry. Stunkard and Koch (1964) used a gastric balloon to measure stomach contractions and found that when compared to normal weight subjects, obese subjects were inadequate in reporting hunger sensations when their stomach was contracting. Schacter, Goldman, and Gordon (1968) failed to find a significant relationship between food deprivation and food consumption in obese subjects, but did demonstrate that the relationship was significant for nonobese subjects. Nisbett and Kanouse (1969) have shown that nonobese persons engage in an increasing amount of impulse buying in supermarkets as a function of food deprivation whereas obese shoppers engage in a consistent amount of impulse buying regardless of how long they have gone without food.

Although internal physiological factors do not seem to influence the eating behaviour of the obese, recent research has demonstrated the importance of external circumstances in regulating the eating behaviour of obese persons. Nisbett (1968) described external factors "as those which, while affecting food intake, are unrelated to nutrition, and include cognitive and sensory cues such as taste properties of food, social

stimuli, and habit" (p. 107). Hashim and Van Itallin (1965) have demonstrated that obese subjects will actually eat less than nonobese subjects when restricted to unappetizing food. Nisbett (1968) has also conducted studies which demonstrated that obese persons ate more than nonobese persons when food tasted good but less than nonobese persons when the food was bad. Schacter and Gross (1968) found that by manipulating the hands on a clock to show incorrect times, obese subjects ate more when they thought that they were eating after their regular dinner hour than they did when they thought they were eating before actual dinner time. No such effect was found for a group of nonobese subjects. Concerning the external sensory cue of the sight of food, Nisbett (1968) found that obese subjects were more compelled than nonobese individuals to eat everything that was placed in front of them although food that was placed nearby but out of sight, even though subjects were aware of its presence, did not influence the behaviour of obese subjects any more than nonobese subjects. Schacter (1971) also showed that obese subjects, rats or humans, ate more than nonobese subjects when food was easy to get at but less than nonobese subjects when food was difficult to get at. Goldman, Jaffa, and Schacter (1968), in a natural setting, demonstrated that obese Jews were actually more successful at fasting than nonobese Jews on Yom Kippur (Jewish

Day of Atonement). Presumably, this was because the eating behaviour of obese persons is more influenced by external cues than the eating behaviour of nonobese persons.

Furthermore, there is evidence which demonstrates that obese subjects are generally more influenced not only by external food-relevant cues but by all external stimuli. Karp and Pardes (1965) found that obese individuals were significantly more field dependent than non-obese individuals as defined by Witkin's (Witkin, Dyk, Faterson, Goodenough, and Karp, 1962) field dependence-independence concept. A study conducted by Glass, Lavin, Henchy, Gordon, Mayhew and Donohoe (1969) provided evidence to show that overweight persons were more susceptible to general persuasibility than normal weight subjects. Another study (Rodin, 1973) demonstrated that distracting stimuli were more disruptive for obese subjects than for nonobese subjects when performing various tasks requiring concentration.

While some personality and psychosomatic factors might contribute to the development of obesity, an ample amount of research suggests that an individual's obesity probably precipitates emotional and personality problems.

Bruch (1958) showed in a twenty year study of obese children that of those who suffered from progressive obesity and poor overall adjustment, most had families

that practiced a critical and punitive approach to the child's weight problem. Other studies (Stunkard and Mendelson, 1961; Stunkard and Burt, 1967) have shown that adults who had been obese since childhood tended to look upon themselves as grotesque and ugly, typically stated their weights as being the source of unrelated problems, and generally categorized people as fat or nonfat without considering talent, intelligence, and wealth in judging others. On the other hand, adults who became obese during adulthood have been found to deny their fatness (Tarini, 1962). In a study of high school girls, Monello and Mayer (1963) reported that the obese subjects showed personality characteristics which were strikingly similar to the traits of ethnic and racial minorities. The authors suggested that the characteristics which included passivity, obsessive concern with self-image, expectation of rejection, and progressive withdrawal, were probably due to the obese status as victims of prejudice. Alexander (1968) noted that female college students with a predominantly endomorphic physique were significantly less accepting of themselves than were ectomorphs or mesomorphs. Maddox, Back, and Liederman (1968) asked a sample of persons to compare themselves to their ideal selves and to fat people for various characteristics. They found that the obese persons felt less like their ideal selves

but also less like obese people than did the normal weight respondents. Previous studies had noted similar traits (e.g. passivity, withdrawal and the excessive use of denial) in the obese population. Bruch (1941, 1957) characterized obese individuals as passive, dependent, lacking in aggressiveness, and lacking self-assertiveness. On the basis of projective tests, Goodman and Kotkov (1953) and Kotkov and Murawski (1952) also concluded that the obese were passive, dependent, and lacked self-assertiveness. Bullen, Monello, Cohen, and Mayer (1963) found a number of characteristics to be common in poorly adjusted obese adolescent girls, including excessive dependency on the family, and the frequent use of passive responses like avoidance or denial. Werkman and Greenberg (1967) found that obese adolescent girls were less ambitious in life goals. Whether or not obese persons develop their obesity because of their passive and dependent characteristics or whether they become passive because of their obesity is not always clear. Carrera (1967) noted at least one researcher who has suggested that inactivity and obesity result from a passive personality. But regardless of which condition precedes the other, overweight persons not only have the problem of obesity to contend with but in many cases apparently lack the motivation to do anything about it. Not surprisingly, weight reducing programs have generally failed due to

the lack of motivation on the part of subjects (Stunkard, 1958).

Stunkard (1958) in noting the general failure of weight reducing programs concluded that "most obese persons will not stay in treatment for obesity. Of those who stay in treatment, most will not lose weight and of those who do lose weight, most will regain it" (p. 79).

A great variety of treatments have been tried. These include the more commercial endeavors such as diet foods and fitness clubs. Also included are dietary and nutrition instruction (Young, Moore, Berresford, Einset, and Waldner, 1955; Yule, Martin, and Young, 1957), group therapy approaches (McCann and Trulson, 1955; Harmon, Purkonen, and Rasmussen, 1958; Holt and Winick, 1961), psychotherapy (Bruch, 1957; Shipman and Plesset, 1963), general medical advice (Stunkard, 1958), hypnosis (Erickson, 1960; Wick, Sigman and Kline, 1970), appetite depressants and other drugs (Silverstone and Solomon, 1965; Penick, 1970), social reinforcement (Schaeffer and Martin, 1969; Moore and Crum, 1969; Foxx, 1972), and fasting (Drenick, 1969). Including even the most recent weight reducing treatments, the ones which have reported success usually have involved only one or a very few patients and have generally found any weight loss to be very short lived (Harris, 1969).

The most successful treatments seem to be those which have been devised by psychologists utilizing

behaviour modification techniques. One such approach has been labelled a 'covert sensitization' procedure in which the smell, taste or the thought of tempting food is followed by various aversive stimuli such as electric shock (e.g. Meyer and Crisp, 1964; Stollak, 1967), nauseous odors (e.g. Foreyt and Kennedy, 1968, 1971), visualizations of aversive scenes (e.g. Sachs and Ingram, 1972) or cognitively imagined nausea (e.g. Manno and Marston, 1972; Foreyt and Hagen, 1973). The treatment is thus based on an escape learning procedure since the subject learns that the termination of the aversive stimuli coincides with turning away from the tempting food.

Two other behavioural techniques which have reported some success have involved either contingency management (Ferster, Nurnberger and Levitt, 1962; Goldiamond, 1965; Stuart, 1967; Harris, 1969; Penick, Fillion, Fox and Stunkard, 1971; Wollersheim, 1970; Harris and Bruner, 1971; Hall, 1972; Stuart and Davis, 1972; Bellack, Rozensky and Swartz, 1973, Harris and Hallbauer, 1973) or some type of contract system (Harris and Bruner, 1971; Mann, 1971; Hall, 1972; Jeffrey, Christensen and Pappas, 1972). Contingency management usually involves self-control procedures in which subjects are taught behaviour modification techniques designed to limit eating behaviour. "The individual may be directed to eat more slowly, in fewer places,

at specified mealtimes, to take only one helping at a time, and to place similar constraints on his customary eating pattern", (Bellack, Rozensky and Schwartz, 1973, p.1).

The contract system usually involves the signing of a document whereby the subject agrees to turn over to the experimenter a large number of valuable personal items. The subject earns back the items by meeting specified weight loss requirements within a given amount of time. Although several researchers have provided evidence to demonstrate the effectiveness of the various behaviour modification treatments (e.g. Janda and Rimm, 1972, with covert sensitization; Mann, 1972, with the contracting procedure; and Bellack et al., 1973, with contingency management) most of the researchers have found it necessary to qualify their findings. Sachs and Ingram (1972) found that the covert sensitization procedure was effective in significantly reducing the consumption of desirable target foods but attributed the results to motivational variables rather than to learning factors. Similarly, Foreyt and Hagen (1973) produced findings which suggested that the covert sensitization procedure may be no more than a matter of suggestion and attention rather than any actual conditioning. Kennedy and Foreyt (1968) found that any weight loss which occurred in the procedure was slow and relatively small. Similarly, Harris and

Hallbauer (1973) recently conducted a contingency management program and found that the treatment resulted in an overall significant weight loss but concluded that the amount of reduction was small in absolute terms. However, a review of the literature will reveal that the most persisting problem with all weight reducing programs is the one which was stated by Stunkard (1958) under the label of 'lack of motivation'. For example, in one study, Harris (1969) reported a dropout rate of only 12.5%, a figure which she considered to be very favourable when compared to others, such as 39% not returning after one visit (Stunkard, 1959), 33% not answering questionnaires after six months (Franklin and Rynearson, 1960), 66% dropping out within one year (Silverstone and Solomon, 1965), and 27% dropping out after one meeting (Shipman and Plesset, 1963). In a later study (Harris and Bruner, 1971), Harris did not replicate her own results when 13 of 32 subjects did not return after the first two weeks of treatment in one experiment and five of 15 subjects failed to return in another. Since all of the subjects who remained in treatment lost weight, Harris reasoned that the procedure (contract system) probably screened out those who were less motivated. In another recent study, Murray and Harrington (1972) reported that of 16 subjects who started treatment, only six subjects remained through to the termination of the program.

That obese subjects have been poor candidates for treatment because of their general lack of motivation is a finding which is consistent with the position that obese persons tend to be passive, withdrawn, and lacking in self-assertiveness. However, since several researchers have reported a certain degree of success with those obese subjects who remain throughout treatment (e.g. Harris and Bruner, 1971) it is surprising that practically no research has been done on predicting the success of obese subjects based on some personality factor. Some research has been conducted to identify those factors which generally motivate people to lose weight. For example, Dwyer, Feldman, and Mayer (1970), have found that the desire to become more attractive is the foremost reason given for dieting behaviour by adolescent girls. On the other hand, boys have been found to diet primarily to improve their sports ability (Dwyer, Feldman, and Seltzer, 1969). Dwyer et al. (1970) suggested also that people may be prompted to lose weight because of the negative stereotypes which are attributed to obese individuals as demonstrated by Maddox, Back, and Liederman, (1968). Of course, the health hazards of being obese might also encourage people to lose weight as obesity has been associated with heart disease, hypertension, pulmonary emphysema, gall bladder disease, and acute and chronic nephritis (Kennedy and Foreyt, 1968).

However, while there may be many reasons which encourage people to lose weight, these reasons obviously do not help to differentiate between the general passive population of obese individuals who do nothing about their condition and those obese persons who are actually motivated to lose weight, and do so successfully.

A study conducted by Manno and Marston (1972) represented a rare attempt by researchers to predict the success of obese subjects at losing weight, on the basis of various tests administered at the beginning of treatment. Although the predictor measures were found to be generally unsuccessful, the researchers did report a significant correlation between internal-external scores and the weight loss of control subjects (greater weight loss was associated with an internal belief in the locus of control of reinforcements). Also, while heavier subjects generally lost more weight, the externally oriented subjects (those attributing little control over reinforcements to themselves) weighed more at the beginning of the study, but had lost less by the end of the study.

The purpose of the present study was to further investigate the relationship between the personality factor of internal versus external control and attempts to lose weight.

The internal-external (I-E) concept has largely been developed from Rotter's (1954) social learning

theory and refers to the extent that a person believes that reinforcements are contingent upon his own behaviour. Social learning theory states that a reinforcement will serve to strengthen an expectancy that a given behaviour or event will be followed by the same type of reinforcement in the future. Throughout life, individuals gradually learn patterns of relationships between actions which they themselves execute and the consequences of those actions. Depending upon certain influential factors in one's history of reinforcement, such as parental upbringing, an individual will be more likely to attribute the occurrence of reinforcement to his own behaviour whereas others will perceive the reinforcement as occurring quite independent of their behaviour. Of course, whether or not reinforcement is perceived as contingent upon one's own behaviour varies with the situation. A person may attribute good school grades to his own hard work but will probably not attribute the finding of something valuable on the sidewalk to his self.

However, the concept of internal versus external locus of control of reinforcement becomes relevant as a personality variable with the argument that expectancies become generalized from specific situations to more general circumstances so that a generalized attitude or belief is formed about the connection of reinforcements to preceding behaviour. Consequently, those individuals

who are characterized as having developed a generalized belief that reinforcements are contingent upon their own behaviour are called 'internal people'. Thus, an internal person feels that there is sufficient capability within his behavioural repertoire to create conditions which will bring about positive rewards. Internal people possess a sense of personal control over important life situations. On the other hand, there are those individuals who have developed a generalized belief that reinforcements occur independently of their own behaviour. These people are called 'external people'. The external person believes that the occurrence of reinforcements must be due to some external source or sources. Accordingly, the external person tends to view his surroundings as an unpredictable environment where luck, fate, or powerful others control the outcomes of important events. External people, then, feel relatively helpless in the determination of what happens to them. Put another way, the I-E concept has been defined as the degree to which people accept personal responsibility for what happens to them (Rotter, Seeman, and Liverant; 1962). In general, Lefcourt (1966) stated that "internal control refers to the perception of positive and/or negative events as being a consequence of one's own actions and thereby under personal control; external control refers to the perception of positive and/or negative events as being unrelated to one's own

behaviours in certain situations and therefore beyond personal control" (p. 207).

A forced-choice questionnaire which is known as the I-E scale (Rotter, Seeman and Liverant, 1962) has been devised to identify where an individual lies along this personality dimension. The I-E forced-choice questionnaire was designed to measure the individual's generalized belief about how reinforcements are controlled in the surrounding environment and consists of items which refer to achievement, social and political attitudes.

Rotter (1966) has pointed out that many social scientists have theorized about the relationship between a belief in fate, luck or chance, and general passivity. Veblen (1899) suggested that a belief in chance or luck is characterized by less productivity. Merton (1949) has also implied a relationship between passivity and the belief in chance or luck. Merton argued that a belief in luck probably represents a defense mechanism which "serves the psychological function of enabling people to preserve their self-esteem in the face of failure" (in Rotter, 1966, p.3). Lefcourt (1966) reviewed animal research which supports the notion that a belief in fate induces a state of passivity and inactivity. For example, Richter (1959) found that normally energetic animals became passive in aversive situations which offered no means of escape. In defining

the various aspects of alienation, Seeman (1959) suggested that the sense of powerlessness is related to the I-E concept.

Since the formulation of the I-E concept empirical research has demonstrated a significant relationship between the degree of internality versus externality and a person's attempts to produce a change in his environment. Gore and Rotter (1963) found that students who made a commitment to take part in civil rights activities were significantly more internal than those who did not make the commitment. Strickland (1965) found that black participants who were already engaged in civil rights activities scored significantly more in the internal direction than a control group of black students who were matched for education and socioeconomic level. On the other hand, other studies (Forward and Williams, 1970; Gurin, Gurin, Lao & Beattie, 1969; Lao, 1970) have demonstrated that black students who attributed the plight of the black people to the social system rather than to personal shortcomings were more likely to get involved in civil rights activities and to take part in boycotts and demonstrations. Gurin et al. and Lao pointed out that though blaming the social system for the problems of the Blacks appears to reflect an external belief in the control of reinforcement, the belief is probably based in reality and should not be interpreted as a personality trait. Thomas (1970)

demonstrated a political ideological bias in the I-E scale and also argued that the scale must be modified "to tease out those aspects of an individual's world view which are reflections of unique traits of his personality from those aspects of his world view which reflect cultural and subcultural norms to which he has been exposed" (p. 285). In addition, Evans and Alexander (1970), and Thomas (1970), failed to find a significant relationship between internality and political participation although Rosen and Sailing (1971) did find a significant correlation between internality and political participation. Other researchers (Rotter, 1966; Hamsher, Geller and Rotter, 1968) have failed to find a relationship between internality and one's willingness to sign a petition, pro or con, on certain issues.

However, other studies have shown a relationship between the I-E dimension and efforts to control one's environment. Davis and Phares (1967) showed that internal people made more of an effort than external people in actively seeking out relevant information for the purpose of influencing the attitude of another person concerning the Vietnam war. Also, Seeman (1964) has demonstrated that the degree of involvement in unions and general knowledge of political affairs are both related to internality. Hershe and Scheibe (1967), in a study of college students who were working in mental hospitals found a significant relationship between

internality and ratings on the effectiveness of the student's summer work.

Some of the research concerning the I-E personality construct and one's efforts to improve his life condition has demonstrated a relationship between internality and individual efforts to control oneself. Straits and Sechrest (1963) found that nonsmokers were significantly more internal than smokers and James, Woodruff, and Werner (1965) found that those male smokers who quit smoking as a result of the United States' Surgeon General's report (1964) were more internal than those who did not quit smoking even though both groups believed the report.

However, in smoking modification sessions, Keutzer (1968) found no difference in I-E scores between successful subjects and unsuccessful subjects in limiting their smoking behaviour. Keutzer suggested that the fact that all subjects were research volunteers might have been a more important characteristic than their all being smokers. Hjelle and Clouser (1970) found that of the external females studied, 50% reported themselves to be smokers as compared with 26% of the internal females. Of the external males, 32% reported themselves to be smokers compared to 27% of the internal males. The differences were only significant for the females.

In a study of tuberculosis patients, Seeman and

Evans (1962) found that internal persons knew more about their own condition, questioned the doctors and nurses more, and expressed less satisfaction at the amount of feedback or the information they were getting about their condition from the hospital personnel. Seeman (1963) found that I-E scores were significantly correlated with the amount of information that was recalled by reformatory inmates when the information was related to achieving successful parole. Internal people have also been found to be more inclined to practice birth control than external people, (MacDonald, 1970; Lundy, 1972). Phares, Ritchie and Davis (1968) concluded that internal people were more willing than external people to remedy personality problems. In view of the latter studies, Joe (1971) hypothesized that internal people would be better able to control their own impulses than external people but this has not yet been demonstrated empirically.

Thus, the existing evidence generally lends support to Rotter's (1962) hypotheses that the individual who possesses a belief that he is in command of his own life is likely to a) be more alert to those aspects of the environment which provide useful information for his future behaviour; and b) take steps to improve his environmental condition as well as his personal condition.

Based on the above empirical and theoretical research and theoretical notions, which have emphasized the relationship between the I-E personality trait and behaviour

which is aimed at improving aspects of one's personal health and well being, the present investigation proposed that the relationship may be extended to include the general condition of being overweight. Even though the general obese population has been described as passive, withdrawn, or generally lacking in motivation (Bruch, 1941, 1957; Goodman and Kotkov, 1953; Kotkov and Murawski, 1952; Bullen, Monello, Cohen and Mayer, 1963; Werkman and Greenberg, 1967; Stunkard, 1958; Harris, 1969; Harris and Bruner, 1971), evidence suggests that an internal individual who is overweight would be more apt than the overweight external individual to assume personal responsibility for his condition and more apt to actively seek out remedies to improve this personal condition.

Therefore, the present study proposed to show that overweight individuals who tend to be more internal 1) would take a personal responsibility for their problem by actively seeking out a weight reducing program; and 2) would take the necessary change inducing measures to actually improve their condition, more so than those who tend to be relatively external.

Further, the present study proposed to show that an individual's belief in control over reinforcements would be greatly strengthened if in fact he was successful in manipulating a condition as important as his personal appearance. Alternatively, the study proposed that an individual who failed in his attempts to

lose weight would interpret his predicament as something which lay outside his control especially if the external belief represents the preservation of self-esteem in the face of failure (Merton, 1946). Thus, it was also predicted that 3) changes in individual I-E scores would correlate with the degree of individual success at losing weight with the most successful persons becoming more internal and the least successful persons becoming more external. Other studies have supported the hypothesis that a change in perceived locus of control (I-E score) can be brought about as a function of treatment aimed at improving one's personal condition. Smith (1970) found that a group of persons experiencing a life crisis (break-up of an important interpersonal relationship, a threat to physical or family integrity, a radical change in social role, etc.) scored significantly more in the internal direction following a six week crisis intervention program while no change in I-E score occurred in the non-crisis control group. Similarly, Gottesfeld and Dozier (1966) reported an increased belief in internal control in subjects who had participated in a community action program and Gillis and Jessor (1970) reported an increased belief in internal control in patients who had undergone psychotherapy.

In summary, the purpose of this study was to examine the relationship between the I-E personality trait and

efforts by overweight individuals to lose weight. The initial weights and I-E scores of 40 overweight women were recorded on entry into a weight reducing club. The women were then asked to take the I-E scale home to have a female friend fill it out. From four to six weeks after a subject had joined a club, her weight and I-E score was again measured and recorded.

METHOD

Subjects

The subjects in the present study were 40 overweight females who joined a weight reducing club. Overweight females were defined as those who exceeded their desirable weight, according to height and average frame, as charted by the Metropolitan Life Insurance Company (1959). The clubs which were used for collecting data were four Counter-Weight clubs and one Tops (Taking Off Pounds Sensibly) club. Thirty-three additional overweight females who were not members of a weight reducing club also served as subjects in the study. All subjects were at least 18 years old.

Apparatus

The measuring device in the present study was a forced-choice questionnaire, the I-E Control Scale, (Rotter, 1966) which is a 29-item test including 6 filler items that help to obscure the purpose of the test. The 23 relevant items on the test are designed to deal with the subjects' belief about the nature of the world or more specifically, the subjects' generalized expectations about how reinforcement is controlled. The score on the I-E test is obtained by adding the number of external choices made by the subject. See Appendix A for a copy of the I-E scale.

Procedure

The experimenter attended every weekly meeting of the participating chapters of the weight reducing clubs for approximately 10 successive weeks. During the first four weeks all females who joined the clubs were individually asked by the experimenter to complete the 29-item questionnaire (I-E scale) on the first night that the subject joined. An answer sheet which was attached to the I-E scale asked that the subject give her name, age, height and weight. Only 'new-joiners' were used as subjects, as opposed to established members of the clubs, to ensure that the subjects' initial I-E score would not be biased by recent success in attaining weight reducing objectives.

The new-joiners were also asked by the experimenter to take home an I-E questionnaire and answer sheet and to have a friend fill it out with the qualification that the friend be an overweight adult female but one who had never joined a weight reducing club. The new-joiners were asked to return the friend's questionnaire the following week.

For each new-joiner, four weeks after the first administration of the I-E scale, the subject was asked by the experimenter to fill out the questionnaire a second time along with the information regarding her name, age, height and weight. If the subject was absent on this occasion she was asked to complete the

questionnaire and answer sheet at the next meeting that she did attend. However, if the subject failed to attend the meetings on the two following weeks it was assumed by the experimenter that she had dropped out of the club. In other words, each new-joiner was tested on two occasions, once when she joined a club and again 4-6 weeks later. If a subject was absent for all three weeks during the 4-6 week retesting period, she was listed as a drop-out.

With the consideration that the subjects might have suspected an expectation on the part of the experimenter concerning changes in the I-E scores, each subject was told prior to the second administration of the test that: "The experimenter usually requires that a person fill out the questionnaire on two different occasions to ensure the reliability of an individual's report of how he views certain important events in his life. However, it is important that you answer the items on the questionnaire without trying to remember how you answered them the first time."

Of the 40 new-joiners who were initially tested, only 24 of them were tested on the second occasion. One of the subjects refused to fill out the questionnaire the second time because "it was too much trouble" and the other 15 subjects had dropped out of the clubs.

Originally, the experimenter had planned to test the friends of the new-joiners with the same pre and post procedure to obtain weight changes and I-E score

changes as control measures. However, since only 9 of the 40 new-joiners eventually returned the questionnaires from friends after the first administration of the test, the procedure proved to be impractical. In order to obtain the I-E scores of more overweight females who were not members of weight reducing clubs, all of the female members of the clubs were asked to have an overweight adult female friend fill out the questionnaire.

RESULTS

Eventually, a total of 33 questionnaires were returned from 'friends'. However, of the 110 questionnaires that had been given out to be completed by friends, the 33 returned questionnaires represented a return rate of only 30%.

Analyses of variance were used to demonstrate that there were no significant differences in the initial I-E scores, $F(4,35)=2.11$, $p>.10$, and in the initial weights, $F(4,35)=.15$, $p>.10$, between weight reducing clubs. In addition, a chi-square goodness-of-fit test was used to demonstrate that there were no significant differences among clubs in the proportion of drop-outs, $\chi^2(4)=.22$, $p>.10$, and the proportion of questionnaires returned from friends, $\chi^2(4)=6$, $p>.10$. Because pre and post measures were obtained from only a limited number of new-joiners, a valid comparison could not be made to determine if there were significant differences between clubs in percentages of body weight loss. In three of the clubs, pre and post weights were obtained from fewer than five subjects. However, the percentages of body weight loss appeared to be quite similar across clubs with means of 5.45%, 5.54%, 5.7%, 5.72% and 6.59%; a range of only 1.14%. Because no apparent differences were found between clubs, the data were combined in the ensuing analyses.

Table 1 shows the initial I-E scores that were

Table 1. The I-E scores and body weights of the joiners and the nonjoiners.

<u>Joiners</u>		<u>Nonjoiners</u>	
I-E scores*	weights	I-E scores	weights
2	176	2	143
4	138	4	158
4	208.5	5	178
4	180	5	230
4	198	6	120
5	149.5	7	180
5	147	7	161
5	185	7	165
6	167.5	9	170
6	196.5	9	195
6	149.5	9	150
7	163.5	9	167
7	158.5	9	147
7	171	9	173
7	235	10	130
7	139	10	160
8	150.5	10	180
8	133	10	180
8	158	11	150
8	260	11	160
9	172	12	298
9	196.5	12	140
10	139.5	12	145
10	160	12	171
10	134.5	13	160
10	152	13	180
11	199	13	136
11	164	13	193
11	147	13	202
11	184	14	190
11	176.5	15	180
11	204	16	160.5
11	154	16	215
11	163		
12	148.5		
13	149		
13	215		
14	200		
15	212.5		
16	146		
Means 8.68	172.0	10.09	171.7

Difference between I-E scores: $t(71) = 1.83, p < .05$
 Difference between weights: $t(71) = .04, p > .10$

* The initial I-E scores that were obtained from the new-joiners.

obtained from the 40 new-joiners and the 33 overweight friends who were not members of weight reducing clubs. The mean I-E score was 8.68 for the group of new-joiners and 10.09 for the group of friends. A one-tailed t-test analysis for independent samples demonstrated that the difference in the I-E scores between the two groups was significant, $t(71) = 1.83, < .05$. A one-tailed test was used because the direction of this difference was predicted. All following t-tests are two-tailed, unless indicated otherwise. Table 1 also shows that the two groups were similar in weight. The mean weight was 171.7 lbs. for the group of friends and 172.0 lbs. for the group of new-joiners. A t-test for independent samples demonstrated that the difference in weights between the two groups was not significant, $t(71) = .04, p > .10$.

The initial weights of all 73 subjects were then grouped according to height, and the resulting means are shown in Table 2 along with the weight norms for adult females as charted by the Metropolitan Life Insurance Company (1959). Table 2 shows that the mean weights of the subjects in the present study were greater than their ideal weights and, as well, greater than the average weights for women of similar heights.

Table 3 shows that the overall I-E mean (9.32) and standard deviation (3.35) from the 73 subjects in the present study lie within the same range as those found in the tables of normative I-E data, that have been presented by Rotter (1966) and Hersch and Scheibe (1967).

Table 2. The Metropolitan Life Insurance weight norms
for adult women compared to the weights of the 73
subjects in the present study, according to height.

height (in ft.)	Ideal weights*	Average weights in lbs. (general)	Average weights in lbs. (present study)
5'	113	128.8	149.5
5' 1"	116	132.2	152
5' 2"	119.5	135.8	178.6
5' 3"	123	139.5	165.7
5' 4"	127.5	143.5	175.8
5' 5"	131.5	147.2	162.8
5' 6"	135.5	151.2	169
5' 7"	139.5	155.2	185.8
5' 10"	151.5	168.0	202.5
6'	not listed	not listed	212.5

* The ideal weights given are those which have been
listed for women of a 'medium frame'.

Table 3. I-E mean and standard deviation obtained in present study compared to the range of those found in normative I-E data, for various samples.

Range of scores	Author	Mean	SD
Lowest score reported	Hersch & Scheibe (1967)	7.38	3.08
	Rotter (1966)	5.48	2.78
Present study		9.32	3.35
Highest score reported	Hersch & Scheibe (1967)	9.54	4.73
	Rotter (1966)	10.00	4.20

The initial I-E scores were then split at the median for the 24 new-joiners who remained in one of the weight reducing clubs for the 4-6 week retesting period. Of these 24 subjects, the 13 new-joiners who had initial I-E scores below the median (10.17) formed the relatively internal group. Similarly, the 11 new joiners who had initial I-E scores above the median formed the relatively external group. Table 4 shows the percentage of body weight that was lost by each of these 24 subjects. For example, subject #1 weighed 139.5 lbs. at the time that she joined a weight reducing club and lost 11.5 lbs. in the 4-6 week period. Thus, subject #1 lost $11.5/139.5 \times 100 = 8.24\%$ of her initial body weight. Note that all but one of the 24 subjects lost weight in the 4-6 week period. The average weight of the subjects decreased from 168.7 lbs. to 158.4 lbs. during this time. A two-way analysis of variance with repeated measures on weight (see Appendix B) was used to show that this reduction in weight was significant, $F(1,22) = 168.12$, $p < .01$, and that there was no difference in original weights between the internal group and the external group, $F(1,22) = 1.4$, $p > .10$. Table 4 shows that the internal group of new-joiners only lost an average of 5.27% of their initial body weight whereas the external group lost an average of 6.53% of their initial body weight. The direction of this difference was opposite to that predicted since the internal group was expected to be

Table 4. Pre and post body weights and I-E scores
for the internal and external joiners.

	Weight		% of body weight lost	I-E scores		change in score	
	before	after		before	after		
internal group	1(I)	139.5	128	8.24	10	8	-2
	2(I)	138	125	9.42	4	2	-2
	3(I)	139	133	4.03	7	11	4
	4(I)	160	149	6.88	10	7	-3
	5(I)	235	222	5.53	7	6	-1
	6(I)	149.5	142	5.02	5	3	-2
	7(I)	134.5	130	3.36	10	10	0
	8(I)	208.5	202.5	2.88	4	8	4
	9(I)	171	159	7.02	7	5	-2
	10(I)	147	147	0	5	8	3
	11(I)	158.5	148	6.62	7	8	1
	12(I)	172	166	3.49	9	7	-2
	13(I)	150.5	141.5	5.98	8	6	-2
Mean = 5.27							
external group	14(E)	199	185	7.02	11	12	1
	15(E)	148.5	145	2.36	12	7	-5
	16(E)	146	139	4.79	16	14	-2
	17(E)	149	138	7.38	13	11	-2
	18(E)	164	152	8.54	11	10	-1
	19(E)	215	203.5	5.30	13	8	-5
	20(E)	147	136	7.48	11	9	-2
	21(E)	184	173	5.98	11	8	-3
	22(E)	212.5	197	7.29	15	12	-3
	23(E)	176.5	160.5	9.09	11	12	1
	24(E)	204	190.5	6.62	11	11	0
Mean = 6.53				9.5	8.45		

more successful at losing weight than the external group. This prediction, obviously, was not supported. However, the difference in weight loss between the two groups was not significant, $F(1,22) = 3.78, p > .05$.

Table 4 also shows the before and after I-E score for each of the 24 new-joiners who remained in one of the weight reducing clubs for the 4-6 week retesting period. The I-E score of the subjects generally decreased during this time, from an average of 9.5 on the first administration of the test to an average of 8.45 on the second administration of the test. A t-test for related samples demonstrated that this reduction in I-E scores was significant, $t(23) = 2.12, p < .05$. The Pearson product-moment correlation coefficient was used to determine whether there was a significant correlation between changes in I-E scores and percentages of body weight loss. This correlation was not significant, $r(22) = -.26, p > .10$. The significance of this correlation was checked with a one-sided test since it was predicted that there would be a negative correlation between weight loss and I-E test scores. The following correlations, since they were not predicted, were tested with two-sided tests. When the internal and external groups were analyzed separately, a significant negative correlation was found between the weight loss, measured in percentage of body weight loss, and changes in I-E scores for the 13 new-joiners who were initially relatively

internal, $r(11) = -.56$, $p < .02$. This indicates that within the group of internal joiners, the more successful they were at losing weight, the more internal they became. Surprisingly, an opposite relationship was found for the 11 new-joiners who were initially relatively external. That is, the less successful they were at losing weight, the more internal they became, $r(9) = .70$, $p < .02$. The above correlations between changes in I-E scores and weight loss scores were also tested on the basis of number of pounds lost by each subject, instead of percentage of body weight loss. These analyses demonstrated similar significant relationships for the two groups, $r(11) = -.59$, $p < .01$, for the internal group and $r(9) = .61$, $p < .05$ for the external group.

The experimenter had suspected that the I-E scores of the other 15 new-joiners, those who did not remain in one of the weight reducing clubs for a minimum of 4 weeks, would be relatively high in the external direction. The assumption was based on the previously stated position that dropping out of a club probably represents a lack of motivation. (e.g. Stunkard, 1968; Harris, 1969). However, a subsequent examination of the data revealed an opposite trend, as shown in table 5. The mean I-E score of the 25 new-joiners who remained in a club for the 4-6 week period (including the subject who remained in a club but refused to fill out the questionnaire on the second occasion) was 9.68 whereas the mean I-E score

Table 5. The I-E scores of the joiners who dropped out and the initial I-E scores of the joiners who remained in a club for at least 4 weeks.

<u>Those who remained</u>	<u>Drop-outs</u>
4	2
4	4
5	4
5	5
7	6
7	6
7	6
7	7
8	8
9	8
10	8
10	9
10	10
11	11
11	11
11	
11	
11	
11	
12	
13	
13	
14	
15	
16	
Means 9.68	7.0

$$t(38) = 2.73, p < .01$$

of the 15 new-joiners who dropped out during this time was 7.0. A t-test for independent samples showed that the difference in the I-E scores between these two groups was significant, $t(38) = 2.73$, $p < .01$.

Finally, the initial I-E scores of all 40 new-joiners were split at the median (8.5) in an attempt to investigate further the findings of the Manno and Marston study (1972) which showed that of the subjects in a control group, externals weighed more at the beginning of weight reducing treatments than internals. Thus, the 20 new-joiners in the present study who had initial I-E scores below the median (8.5) formed the relatively internal group and the 20 new-joiners who had initial I-E scores above the median formed the relatively external group. Table 6 shows the initial weight of each of the 40 new-joiners and demonstrates that the average initial weight was 173.2 lbs. for the internal group as compared to an average initial weight of 170.9 lbs. for the external group. A t-test analysis for independent samples demonstrated that this was not a significant difference, $t(38) = .93$, $p > .10$.

Table 6. The initial weights of all the joiners,
described as relatively internal or external.

Weights	
<u>Internals</u>	<u>Externals</u>
176	172
138	196.5
208.5	139.5
180	160
198	134.5
149.5	152
147	199
185	164
167.5	147
196.5	184
149.5	176.5
163.5	204
158.5	154
171	163
235	148.5
139	149
150.5	215
133	200
158	212.5
260	146
Means = 173.2	170.9

$$t(38) = .93. \quad p > .10$$

DISCUSSION

The main purpose of the present study was to investigate the relationship between the I-E personality trait and attempts by overweight women to remedy their weight problem. Three specific predictions were made. First, the prediction was made that overweight women who joined a weight reducing club would score more in the internal direction on the I-E scale than overweight women who had not joined a weight reducing club. As indicated in the results, the overweight women who joined a weight reducing club during the course of the present study did score significantly more in the internal direction than a control group of overweight female friends who were similar in weight but who did not belong to a weight reducing club. This finding that the joiners were more internal than the nonjoiners adds further support to the position (Rotter, Seeman and Liverant, 1962) that an internal individual is more likely to seek out those aspects of the environment that provide personally important and useful information.

However, for the overweight women who did join a weight reducing club there was no significant relationship between their initial I-E scores and subsequent weight loss. Thus, while the women who joined a weight reducing club were generally more internal than those women who were nonjoiners, the more internal joiners did not do better at losing weight than the joiners

who were relatively external. An argument which has been put forth by Lefcourt (1967, 1969, 1971) offers a feasible explanation for the present findings. Lefcourt has conducted studies which suggest that a lack of goal-striving behaviour on the part of persons with external control expectancies "may be more adequately predicted on the basis of cognitive and perceptual type deficiencies than from a lack of motivation for those goals" (p. 377). For example, Lefcourt (1967) found that performance on a level of aspiration task increased immensely for external subjects when they were explicitly told about the types of reinforcement that were available for good performance. Thus, the apparent motivational differences between internals and externals might arise only from the fact that the internal individual is better able to make an adequate search of reinforcement opportunities because of his superior cognitive ability which enables him to organize relationships between potential reinforcement opportunities and forms of personal behaviour. Apparently, when these relationships are explicitly spelled out for the external person, his particular 'motivational' problem is eliminated. Lefcourt has also suggested that "external control individuals may be extremely ready to benefit from external direction, more so than the internal control person who, in a sense, already has decided what reinforcements are available." The results of the present study and the results of a study that was conducted by Manno and

Marston (1972) support Lefcourt's contention. As previously mentioned, in the present study, there was no difference in the degree of success at weight reduction between internal and external people. In Manno and Marston's study a significant correlation between internality and weight loss was found for the minimal treatment control group but not for the two experimental groups who received a thorough program of treatment for their weight problem. Thus, the degree of success in losing weight was similar for internals and externals only when the external direction was explicit. When the external direction was minimal, internal persons were significantly more successful than external persons in losing weight. Keutzer (1968) has also found that subjects who were successful in reducing their smoking behaviour as a result of behaviour modification treatments were no more internal than unsuccessful subjects, suggesting that externals were just as able to achieve success as internals when given explicit external direction. In retrospect, the type of procedure that was employed by the weight reducing clubs would seem to be of particular benefit for the external person. On the basis of Lefcourt's contention, one would expect an overweight internal person to engage in more independent weight reducing behaviour than an overweight external person since the internal person is, cognitively, better able to form the 'link' between an improvement

in his present eating habits and subsequent reinforcements. However, when an external individual joins a weight reducing club he has this cognitive 'link' filled in for him by the supervisor and lecturers of the club who provide explicit guidance and direction, on the relationships between available reinforcements and aspects of one's eating behaviour. Accordingly, a weight reducing club would tend to stimulate the goal striving behaviour, more for external persons than for internal persons. In addition, external individuals have been described as more suggestible and conforming than internal persons in various situations, (Biondo and Macdonald, 1971; Ritchie and Phares, 1969; Odell, 1959; Crowne and Liverant, 1963; Jones and Shrauger, 1968) and might therefore be more susceptible to the social pressure exerted by a weight reducing group to lose weight. On the other hand, internal individuals have been described as particularly resistive to external manipulation (Rotter, 1966; Getter, 1966; Strickland, 1970), and independent (Hersch and Scheibe, 1967). These differences between internals and externals would also be compatible with the results from the present study which showed that drop-outs were significantly more internal than those who remained in a weight reducing club for at least a four week period. After having heard a couple of lectures and after receiving the literature that is given out by the weight reducing clubs concerning good

nutritional diets, the internals who dropped out perhaps may have felt that they had obtained all of the useful information that would be needed for them to attain their weight reducing objectives independently. The philosophy that "you will not succeed in losing weight if you do not stay in our club" might also be unacceptable to the internal control individual who believes that he can bring about reinforcements on his own, whereas the philosophy might sound quite reasonable to the external individual who already believes that reinforcements are controlled by external sources.

The experimenter attempted to conduct a follow-up study of the drop-outs to examine their weight reducing progress but only two of the 15 individuals responded to a written request for information. Perhaps the poor response was a further indication of an internal person's resistance to external interference. At any rate, the prior assumption that dropping out of a weight reducing treatment signified a lack of motivation does not seem to be a totally valid one. That is, those who drop out of weight reducing treatments might very well represent the internal portion of the group who have decided that they have acquired enough information to proceed on their own. Whether or not drop-outs do succeed in losing weight would make an interesting study in relation to the I-E concept. The findings that were presented by Manno and Marston (1972) suggest that persons with internal control

expectancies would likely succeed on their own. The two drop-outs that did answer to the written request in the present study had both lost weight since joining a club. One of the drop-outs had lost 6.79% of her body weight and the other one had lost 3.53% of her body weight.

In summarizing the present findings thus far, it seems that internal individuals are more likely to seek out those aspects of the environment that provide personally important and useful information, but possibly because internal persons are more perceptive of these aspects as means of creating reinforcements, rather than because they are more motivated.

The third prediction that was made in the present study had to do with attitude changes that would follow from success (or failure) at losing weight. In view of the fact that previous studies (Rotter, 1966; Hersch and Scheibe, 1967) on the test-retest reliability of the I-E scale have demonstrated a general reduction of scores on the second administration of the test, the prediction that was made in the present study was that the internal shift in I-E scores would be 'correlated' with the amount of weight loss. As shown by the results, the correlation between changes in I-E scores and weight loss scores was not significant, $r(22) = -.26$, $p > .10$, when the data were calculated for all of the 24 new-joiners, but the correlation was high and significant,

$r(11) = -.66$, $p < .02$, when calculated for the 13 new-joiners who had been categorized as internal. In other words, the more successful the internal person was at losing weight, the stronger his attitude became that he could control reinforcements. This finding supports Rotter's (1966) hypothesis that a reinforcement which is seen as contingent upon the subject's own behaviour will serve to strengthen an expectancy when the reinforcement actually occurs.

However, when the data were calculated for the 11 new-joiners who had been categorized as external, a significant but opposite relationship was found, $r(9) = .70$, $p < .02$. That is, within the group of external persons, those who were relatively unsuccessful had a greater reduction in I-E scores than those who were relatively successful. A possible interpretation of these findings is based on the previously stated position (e.g. Biondo and Macdonald, 1971; Ritchie and Phares, 1969) that external persons are particularly susceptible and conforming to external influence. That is, perhaps the external new-joiners simply accepted the responsibility that was attributed to them by the supervisors of the weight reducing clubs, who tend to stress the role played by the club over that of the individual in accounting for success, but who also tend to blame individual behaviour for lack of success. For example, an external person who is constantly told that "our weight reducing treatment

has done wonders for you" might be likely to attribute her success to the club (external source), whereas an external person who is told that "you have not lost weight because you have not followed our guidelines" might be likely to attribute her failure to herself (internal source). Note that in cases where an external belief in locus of control has been altered in the direction of internality the procedure has aimed at explicitly demonstrating to the person how reinforcements can be brought about by his own behaviour (Lefcourt and Ladwig, 1965; Smith, 1970; Gottesfeld and Dozier, 1966; Gillis and Jessor, 1970).

An additional finding of the present study showed that the initial weights of the 40 new-joiners was not related to their initial I-E scores. Manno and Marston (1972) had demonstrated that external subjects weighed significantly more than internal subjects at pre-treatment although the relationship was found only for the subjects in a control group and not for the subjects in two treatment groups. In the present study, the average initial weight of the 20 new-joiners who were relatively external (170.9 lbs.) did not differ statistically from that of the 20 relatively internal new-joiners (173.2 lbs.). Since the three groups in Manno and Marston's study were similar in size there was probably no overall relationship between initial weights and initial I-E scores, and even though the subjects were randomly

assigned to each of their three groups the authors did not suggest reasons why the relationship was found only for the control group.

A number of issues which have been raised in the present discussion warrant further investigation. Does the external guidance of a weight reducing club play more of a role in the weight reducing success of external persons than internal persons? Alternatively, in attempting to lose weight independently of external guidance would internal persons achieve more success than external persons? According to the arguments which have been presented in the present study the answers to both of these questions would be yes. To help answer these questions perhaps a study could be devised whereby overweight internal and external persons would be split evenly into two groups, a minimal treatment group and a maximal treatment group. The two groups would differ substantially in the amount of external guidance that would be employed. Such a study would reveal comparisons within each treatment as well as across treatments and would certainly lend insight into the relationship between external guidance and the goal striving behaviour of internal versus external persons.

A couple of paradoxes have also emerged from the present study. First, the argument has been made that external persons might be more likely to benefit from going to a weight reducing club because of their assumed

susceptibility to external guidance, but are less likely to join a weight reducing club in the first place because of their poor perceptual alertness.

Secondly, the interpretation that overweight women who score more in the external direction on the I-E scale are those who are especially likely to benefit from the explicit guidance of a weight reducing club creates a paradox with the established assumption that the eating behaviour of overweight persons is controlled by external food-related cues (Nisbett, 1968; Schacter and Gross, 1968; Schacter, 1971; Goldman, Jaffa, and Schacter, 1968). Thus, an external person in a weight reducing club would seem to be particularly susceptible to the simultaneous influences of two different types of external forces, of which one is helping his weight reducing efforts while the other is hindering them. Accordingly, it would be interesting to investigate whether the degree of belief in external control of reinforcements interacts in any way with the degree of susceptibility to external food-related cues in determining weight reducing success.

In summary, the present study found that overweight women who joined a weight reducing club scored significantly more in the internal direction on the I-E scale than a control group of overweight women who had not joined a weight reducing club. This finding adds further support to the position that an internal individual is more likely to seek out those aspects of the environment

that provide personally important and useful information (Rotter, Seeman and Liverant, 1962).

The present study also found that of those overweight women who did join a weight reducing club, there was no significant difference in weight loss between the relatively internal women and the relatively external women, a finding which supports Lefcourt's (1967, 1969, 1971) contention that the apparent goal striving superiority of internal individuals over external individuals is due more to differences in perceptual abilities than to motivation.

Finally, the present study demonstrated a complex relationship between changes in I-E scores and weight loss scores. Within the group of persons who had been categorized as internal, the more successful they were at losing weight, the more internal they became. However, within the group of persons who had been categorized as external, the 'less' successful they were at losing weight, the more internal they became over the 4-6 week period.

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SOCIAL REACTION INVENTORYInstructions:

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief; obviously there are no right or wrong answers.

Your answer to the items on this inventory are to be recorded on the answer sheet. Print your name and the other information requested on the answer sheet, then finish reading these directions.

Please answer these items carefully but do not spend too much time on any one item. Find the number of the item on the answer sheet and circle either a or b, the letter which you choose as the statement most true. Be sure to find an answer for every choice.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

REMEMBER

Select that alternative which you personally believe to be more true.

I more strongly believe that:

1. a. Children get into trouble because their parents punish them too much.
b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't have enough interest in politics.
b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks one cannot be an effective leader.
b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try, some people just don't like you.
b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
b. It is one's experiences in life which determine what they're like.
9. a. I have often found that what is going to happen will happen.
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

I more strongly believe that:

10. a. In the case of the well-prepared student, there is rarely if ever such a thing as an unfair test.
b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
11. a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in Government decisions.
b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans, I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. a. There are certain people who are just no good.
b. There is some good in everybody.
15. a. In my case getting what I want has little or nothing to do with luck.
b. Many times we might as well decide what to do by flipping a coin.
16. a. Who gets to be the boss often depends on who was lucky enough to be in the first place first.
b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.
b. By taking an active part in political and social affairs, the people can control world events.
18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
b. There really is no such thing as "luck".

I more strongly believe that:

19. a. One should always be willing to admit his mistakes.
b. It is usually best to cover up one's mistakes.
20. a. It is hard to know whether or not a person really likes you.
b. How many friends you have depends upon how nice a person you are.
21. a. In the long run the bad things that happen to us are balanced by the good ones.
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. a. With enough effort we can wipe out political corruption.
b. It is difficult for people to have much control over the things politicians do in office.
23. a. Sometimes I can't understand how teachers arrive at the grades they give.
b. There is a direct connection between how hard I study and the grades I get.
24. a. A good leader expects people to decide for themselves what they should do.
b. A good leader makes it clear to everybody what their jobs are.
25. a. Many times I feel that I have little influence over the things that happen to me.
b. It is impossible for me to believe that chance or luck plays an important role in my life.
26. a. People are lonely because they don't try to be friendly.
b. There's not much use in trying too hard to please people; if they like you, they like you.
27. a. There is too much emphasis on athletics in high school.
b. Team sports are an excellent way to build character.
28. a. What happens to me is my own doing.
b. Sometimes I feel that I don't have enough control over the direction my life is taking.

I more strongly believe that:

29. a. Most of the time I can't understand why politicians behave the way they do.
- b. In the long run the people are responsible for bad government on a national as well as on a local level.

ANSWER SHEET

Name _____ Age _____ Sex _____

Height _____ Weight _____

1. a b

2. a b

3. a b

4. a b

5. a b

6. a b

7. a b

8. a b

9. a b

10. a b

11. a b

12. a b

13. a b

14. a b

15. a b

16. a b

17. a b

18. a b

19. a b

20. a b

21. a b

22. a b

23. a b

24. a b

25. a b

26. a b

27. a b

28. a b

29. a b

Appendix B

Analysis of variance to test the relationship between the I-E classification of subjects and amount of weight loss. (Unweighted-means solution, Winer, p. 502, 2nd ed., 1971)

Source of Variation	SS	df	MS	F
Between <u>Ss</u>		23		
A	2204.72	1	2204.72	1.4
<u>Ss</u> w. groups	34542.56	22	1570.11	
Within <u>Ss</u>		24		
B	1192	1	1192	168.12
AB	26.82	1	26.82	3.78
B <u>Ss</u> w. groups	155.98	22	7.09	